

PROJECT REVIEW

SERVICIO SOCIAL DE IGLESIAS DOMINICANAS

AQUACULTURE PROGRAM II

(AID OPG 517-0162)

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I. INTRODUCTION

The first year's activities of the USAID sponsored aquaculture project conducted by Servicio Social de Iglesias Dominicanas (SSID) were evaluated by Dr. Ronald P. Phelps of the International Center for Aquaculture, Auburn University, January 16-30, 1983.

The current program, which is in the second phase, has completed one year of a three year program. The purpose of this second phase is to increase fish hatchery facilities, establish a system for collecting information to determine the economic and social acceptability of fish culture, which can be used as baseline data for a future nationwide aquaculture program, and improve communication and coordination among other agencies involved in aquaculture.

The specific objectives of the program are as follows:

- Develop and expand fish hatchery facilities;
- establish a framework for cooperation among various agencies involved in fish culture;
- investigate the types of fish available for freshwater fish production and appropriate feeding practices;
- improve technical capabilities of extension agents;
- increase fish production at existing fish ponds; and
- study the production costs and capabilities of small farmers to produce fish.

II. PROGRESS TOWARD THE SPECIFIC OBJECTIVES

A. Expansion of Existing Facilities

The Fundación para el Desarrollo de la Comunidad (FUDECO) program has made ponds available for the SSID program for demonstrations, training and

fingerling production. There are three ponds in the Loma de Cabrera zone and one in the San Juan zone. There are another two ponds at the FUDECO center, near San Juan, that can be used once water supply and pond filtration problems can be corrected. Three additional ponds at the SSID center, in Capotillo, have been constructed thus increasing its fingerling production capability. In San Juan area, additional ponds at the km. 6 campamento have been constructed and with some being used for fingerling production.

Earlier problems of shortages of carp fingerlings has generally been corrected although there are still problems of having quality tilapia fingerlings. Temporary shortages of fingerlings have occurred but with better planning and the availability of the expanded facilities these problems can be corrected.

B. Establish a Framework for Cooperation Among Agencies Involved in Aquaculture

There has been close cooperation between SSID and FUDECO in the use of staff and facilities. A well documented production study was conducted at the FUDECO center near Loma de Cabrera. The Instituto Dominicano de Tecnología (INDOTEC) and SSID have continued to cooperate during the last year for the production of tilapia hybrids. Linkage has been established between the SSID program and the Aquaculture Department of the Government of Panama through the training provided for the SSID Project Coordinator, Juan Santana.

Further cooperation is anticipated during the next year between SSID, Peace Corps, FUDECO, INDOTEC and other agencies as more emphasis will be given to training using both the facilities of FUDECO and INDOTEC.

C. Investigate the Types of Fish Available for Freshwater Fish Production and Appropriate Feeding Practices

Some studies associated with the economic analysis study have been conducted at Capotillo and the FUDECO center, near Loma de Cabrera. Continued effort in this area is needed to better establish the extension recommendations. (For further comments see Recommendations, Page 5 .)

D. Improve Technical Capabilities of Extension Agents

The Project Coordinator, Juan Santana, was in Panama for one month to study Chinese carp reproduction. This was a timely training program as the Chinese carp of the SSID program will be mature for the first time in early 1983. Field staff have received training in conducting the economic study through a series of staff conferences that were held in 1982.

One of the field extension agents is scheduled to receive training in 1983 by participating in a 16-week aquaculture training program given by Auburn University.

E. Increase Fish Production at Existing Fish Ponds at the Small Farmer Level

Overall fish production potential has increased in 1982 as 37 new ponds were constructed during that time period. The emphasis on construction reduced the time available for existing ponds and improving their management. But there was sufficient information available to show that there had been some improvement in production in the Loma de Cabrera zone of approximately 375.3 lbs. per hectarea. Tables 2 and 3.

F. Study the Production Costs and Capabilities of Small Farmers to Produce Fish

An economic study was begun in 1982 of the SSID program to describe the nature of the farmers participating in the program, pond construction costs

and fish production costs. Considerable progress has been made on this. The farmers participating in the program are generally full-time farmers without large landholdings and little educational background. (A description of the farmers is given in Appendix 1.)

There were not enough detailed information on most farmers fish production to make any generalizations about the economic viability of fish culture in the region, but there were enough data available for some farmers to know potential gross income and some input costs.

As the program is now conducted, the major production costs to the farmer are feed, fertilizer and equipment. The labor used is from within the family or friends with some help from the extension agents. The pond is constructed without charge by SSID and the fish fingerlings are also furnished without charge. The majority of the farmers are producing fish for home consumption and only a small percent being sold. The most sold by any one farmer was 70% of his total production. Prices received by the farmers were RD\$0.50 to RD\$0.60/lb. in the Loma de Cabrera region and RD\$1.00 to RD\$1.20 in the San Juan de la Maguana region.

Projected incomes where production costs of feed, fertilizer and equipment charges were subtracted ranged from RD\$11.55 per tarea in a poorly managed pond to RD\$86.80 per tarea for a well managed pond.

Much more information is anticipated to be available during Easter Week when many ponds are scheduled to be harvested. Much of the information available during the period of this report was from farmers that have been in the SSID program for several production cycles or from FUDECO ponds. Greater effort is needed to include a broader base of farmers in the production study.

Continued importance needs to be given to this economic study by the extension agents not only to comply with the OPG, but because they can evaluate their own extension recommendations and have an economically sound program that can be used in other parts of the country.

III. PROBLEMS ASSOCIATED WITH THE PROJECT AND RECOMMENDATIONS

A. Technical

The principal problem encountered is that the production from most ponds is generally low. This is due to a variety of interacting factors such as pond management practices are not well defined, fingerling availability has been sporadic, and not enough nutrients are being added to the pond. The lack of nutrient input is the major factor and is brought about by several factors such as availability, need for better recommendations on input requirements and the need to make the farmer more aware of the importance of the nutrient inputs.

1. Demonstration and Field Experiments

There is a strong need for field experiments and demonstrations to enforce the extension program. The present management recommendations are often rather flexible with little proven results to support them. There are several management procedures which should be documented. This would include using only cow manure, chicken manure or an inorganic fertilizer, and determine what type and what rate of fertilization could give acceptable fish production. The productions possible when fish are fed only rice meal mixed with blood should be compared. The productions obtainable with feeding and fertilizing should also be better documented.

The combination of duck and fish culture should be studied. A major problem for many of the farmers in the SSID program is the lack of on-farm nutrients that can be added to the fish pond. One source of nutrients can be duck culture where both the waste feed and duck manure go directly into the pond. Duck-fish culture has been a successful combination in many countries but in the Dominican Republic it has not been well demonstrated. The profitability of producing ducks at the small farmer scale and the demand for duck in the region should be determined as a part of investigating a duck-fish culture system.

The above mentioned field experiments could be conducted at Capotillo and the FUDECO centers during the remaining two years of the project. One study that should be given priority is culturing all-male tilapia at a density of one fish per M^2 for 180 days feeding rice meal mixed with blood and fertilizing the pond at a rate of 2,000 kg/ha of chicken manure per month. A projected yield for such a system is given in Table 3.

Demonstrations should be an important component of the extension activities and will be best received when it can be done at the farm of a participating farmer. Emphasis should be given to the importance of pond fertility, how to visually determine if more nutrients need to be added and seeing harvest of productive ponds where the amount of feed and fertilizer is well documented. The proper use of demonstrations and training will help convince the farmers of the necessity of adding feeds and fertilizers and thus help address the problem of low production from the ponds.

2. Nutrient Shortages

One of the reasons given as to why not enough nutrients were being added to a pond was that many farmers did not have enough cash on hand during the fish production cycle to buy the needed fertilizers and feeds. There is a definite on-farm shortage of nutrients for fish culture for most of the farms in the SSID program. Rice meal and cow and chicken manures are available in the region at low costs but need to be transported to the farm. To help make feed and fertilizer more readily available, a rotary fund, for use by farmers in the SSID program, was budgeted for the second period of the project. This fund would be administered by a committee composed of SSID staff, a Peace Corps volunteer and a representative of the farmers from each project area. The fund would be designed to furnish feed and fertilizer needed for each crop of fish with the farmer being responsible for paying back the costs of these materials at the end of each production period.

It is recommended that as a part of the rotary fund program, the farmers cooperating in the economic study be given a discount on feed and fertilizer based on how complete is the economic data he provides about his fish production. A variable scale could be used depending on the information provided. All farmers would receive a 5% discount if they provided detailed harvest data giving numbers and weights by size groups for each species harvested. If they provided the needed harvest data along with amounts of feed and fertilizer used and their costs but did not provide information for any two items, such as labor or equipment used, then they would receive a 10% discount. If they provided all the needed information they would receive a 25% discount on feed and fertilizer costs. Such discounts would be available for the first

two crops of fish and would be a significant help in collecting the economic data desired as a part of the project.

3. Extension Activities

Another factor contributing to the relatively low yields from the ponds is that the farmers do not fully appreciate the importance of adding nutrients to their ponds and that fish are an animal to be managed. The concept of producing plants or animals by fertilizing or feeding is not widely practiced by many farmers thus to do so for fish requires an effective extension program. A key component should be on-farm visits with each farmer at least monthly if not bi-weekly. These visits should be at the pond bank where the extension agent can see the condition of the pond and reinforce with the farmer the importance of maintaining pond fertility. These visits should also be used to collect the economic information needed for economic study.

During the next year less emphasis should be given to pond construction and more to increasing the production from existing ponds. More emphasis should be given to farm visits, demonstrations and training programs. The small size of most of the ponds in the SSID program makes it important that yields be increased so that at harvest a large enough weight of fish is harvested to have the farmers feel that they have been adequately rewarded for their efforts. A stronger extension effort is needed to help the farmers increase their yields.

4. Fingerling Supply

Progress has been made in fingerling availability during the last year but continued effort is needed so that fingerlings are available

on a more timely basis. Additional ponds are available for fingerling production but improved management of the ponds is needed. Particular attention should be given to the schedule of stocking and harvesting so that the demand for fingerling can be anticipated. Emphasis should be given to producing all-male Tilapia Nilotica by hand sexing and less to hybrid production and common carp.

5. Overall Impact of Program

It appears that the SSID program will have a positive impact on the farmers participating in the program. The scope of this impact will be greater as greater productions are obtained from their ponds. The additional production will help meet home consumption demands and have more available for sale in the immediate area, but to have a significant nutritional impact on the region a much larger volume of fish will be required. If all the ponds associated with SSID were producing foodfish at intensive levels, a total production of approximately 30 tons of fish per year would be produced but most of that production would remain in the immediate area of the pond.

Consideration should be given to providing technical assistance to farmers which are interested in producing fish on a commercial scale. Large scale operations would need to market fish in the larger communities of the region and thus reach another group which presently has only limited access to fish. Attention should be given to the cattle farmers of the regions as potential individuals which might enter into fish culture on a commercial scale. They often have enough land that finding a site for a 2,000-3,000 M² is possible. They have on-farm availability of manure, particularly dairy farmers, and they have less problems with the availability of cash to purchase

feeds and other supplies. If one or two farmers can show that fish culture is a lucrative commercial enterprise, then other farmers in the region may follow. It will be the large scale farmers that will make the most nutritional impact on the region but the small-scale farmer may have the greatest needs for the fish produced.

B. Administrative Problems

The SSID Aquaculture Program has grown considerably since it first began and this growth has increased the administrative difficulties. The increased activities has made the monitoring and planning more difficult. During this review and in the previous one several recommendations were made regarding the program. One of those was that a more effective reporting system be used both from the field to the Project Coordinator and from the Project Coordinator to A.I.D.

The monthly reports from the field to the Project Coordinator should give the frequency with which each farmer in the program was visited, the progress and problems each farmer has, progress in data gathering for that farmer, dates that his ponds are harvested or stocked, and yields obtained. The monthly reports should also project activities for the next month, give materials and supplies required for the next several months, and give anticipated stocking and harvesting dates.

This information should be summarized and included as a part of the Coordinator's quarterly report. The Project Coordinator's report should discuss progress made in the economic study, training programs given and use of the rotary fund. This report should also give projections for the next quarter for fish production, training and budget requirements.

As a part of this review the budget was reprogrammed for the remaining two years of the project by month by activity. These projections need to be reviewed at least quarterly and any necessary program modification be made.

Additional personnel are needed in each project area to properly conduct the extension activities. In the San Juan area an additional person is needed to give have a total of three agents in this region. Provisions need to be made to have another person available to replace one of the extension agents in the San Juan area as he leaves for a four-month training program in March of 1983. An additional person will be needed in the Loma de Cabrera region to replace a Peace Corps volunteer, who has been working as an extension agent and will finish his tour in August of 1983.

Discussions were held with the Peace Corps Director about the availability of additional volunteers for the program and the outlook is favorable. Additional follow-through is needed to insure that volunteers will be available and the necessary logistical support can be provided. Transportation is a particularly critical item especially as more effort will be given to at-farm visits. Two motorcycles have been budgeted for 1983, one for each project area. One is needed as soon as possible for the one extension agent in Loma de Cabrera, who is without transportation.

IV. SUMMARY

The SSID Aquaculture Program has made considerable progress in the first year of its second phase program. An additional 37 ponds were constructed during the year. Progress has been made in the economic study. Improvements

have been made in fingerling availability. The yields obtained from ponds in the program are relatively low but several steps are programmed for the remaining portion of the project to improve yields.

A P P E N D I X

DESCRIPTION OF FARMERS IN SSID AQUACULTURE PROGRAM

ZONA DE LOMA DE CABRERA

Nombre	Por qué tiene interés en criar peces?	Cómo supo sobre el cultivo de peces?	Ha participado en algún programa del SSID?
Pedro Alcantara	Con el fin de comer	Promotor de Iglesia Evangélica	Camino Vecinal, desarrollo comunal
Manuel Pérez Pérez	Comer, venta segura	Vecino tenía crianza	No
Rafael Contreras	Alimento	SSID	No
Radamés Paulino	Para comer	SSID	No
Pascual Mercedes Olivo	Para comer	SSID	No
Epifanio Espinal	Para comer	SSID	No
Silvano Ovando Contreras	Para comer	SSID	No
Eusebio Peñalo	Para comer y vender	SSID	No
Matías Guzmán	Para comer y vender	SSID	No
Toñito	Comida	Santana	No
Federico Estévez	Necesidad de comida	SSID	No
Julio Pascual Tejeda	Para comer	SSID	No
Pedrito Heded Batista	Para comer	SSID	No
Carmelo Espinal	Porque sirven para comer y a la vez dan beneficio	SSID	Caminos Vecinales
Salvador	Comida	SSID	Sí
Bernardo Espinal	Para comer	SSID	No
Bicente Batista	Para comer	SSID	No
Ricardo González	Por necesidad de comida	SSID	No

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ZONA DE SAN JUAN DE LA MAGUANA

Nombre	Por qué tiene interés en criar peces?	Cómo supo sobre el cultivo de peces?	Ha participado en algún programa del SSID?
Juan Bta. Sánchez	Por necesidad	Por medio del promotor	Camino Vecinal
Pedro Almendáriz L.	Para sostener la familia	Estanque del vecino	No
Simón Bolívar Santil	Comer, vender	Por agricultor del programa de Peces Arsenian	No
Alcides Montero Peralta	Para comida de la familia	Ví otra crianza del programa de peces del SSID	Camino Vecinal
Ernesto Romero	Porque es de utilidad para la familia ya que no hay cerdos ni reses para sacrificar	Por medio de una charla en la asociación de un voluntario del Cuerpo de Paz	Pozos, Camino Vecinal, hortalizas
Cristóbal Báez Villega	Beneficios económicos	Por medio de un estanque que ví en la caña de Guazumal	No
Solón Morillo de los Santos	Porque contribuye a la alimentación de la casa, porque probé que tiene buena venta	Por medio de la promoción combinada de un promotor y el voluntario Lawrence Croetz	No
Aníbal Ramírez	Está terminada la pesca de rios y quiere seguir pescando.	Por SSID, Rev. William	No
Luis Enrique Adamis	Quiere que exista crianza de peces en el área y para su propio beneficio	Propio interés y FUDECO y SSID	No
Venerado Mateo	Porque me ayuda con la carne para la comida	Por medio de una charla	Camino Vecinal, centro comunitario, canal-acueducto

TABLE 1

PRODUCTIONS BEFORE MAY, 1982ZONA DE LOMA DE CABRERA

Pedro Alcantara	1,238	lb/ha	- Carp and tilapia
Rafael Contreras	1,339	"	- Tilapia hybrid, 96 days
Pascual Mercedes Olivo	1,100	"	- Carp
Firo	2,988	"	"
Matía Guzmán	913	"	"
	388.5	"	
Salvador	1,384	"	- Tilapia
Bernardo Espinal	80.5	"	
Bienvenido Richardson Est	2,857	"	- Tilapia in 8 months
Ricardo González	<u>3,065</u>	"	- Tilapia and carp
Average Production	1,535.3	"	= 697 kg/ha

TABLE 2

PRODUCTIONS AFTER MAY, 1932ZONA DE LOMA DE CAERERA

Rafael Contreras	1,427.7	lb/ha
	723.0	"
Richardo González	2,387.6	"
Campamento No. 2	1,570.0	"
Campamento No. 3	1,016.7	"
CAOTACO No. 1	3,110.5	"
CAOTACO No. 2	1,705.0	"
Capotillo No. 3	2,400.0	"
Capotillo No. 7	<u>2,846.0</u>	"
Average Production	1,910.6	"

TABLE 3

POTENTIAL AND REQUIREMENTS FOR A WELL MANAGED
PCND IN SSID PROJECT

Pond size	-	500 M ²
Stocking rate	-	1 male , 20g tilapia/M ²
Growth rate	-	1 gram/day/fish
Feeding rate	-	3% of body weight per day
Fertilizer rate	-	2,000 kg/ha/month
Culture Period	-	180 days
Production	-	220.2 lb/pond = 100 kg/pond = 2,000 kg/ha
Gross profit at \$0.70/lb	=	\$154.14
Feed requirements/pond	-	565 lb of rice meal at \$5.00/100 lb = \$30 pesos in feed costs-transport
Fertilizer require- ments/pond	-	500 kg total = 1,101.3 lb chicken manure at \$0.50/sack of 67 lb need 16.44 sacks for a total of \$8.50- transport.
Inorganic fertilizer	-	12.4 lb/pond/month: = 61.75 lb/pond at \$17.00/100 lb = \$10.50/pond-transport

ZONA DE SAN JUAN DE LA MAGUANA																
Nombre	Edad	Hijos	Depen- dientes	Nivel Acad.	% Agric.	Otro Ingreso	Tareas Tierra	En Cult.	Pro- pio	Cultivos			Fert.	Insect.	Asist.	
										Tipo /	Area /	Producción			Téc.	Préstamo
Juan Bta. Sánchez	32	6	8	5to	90	Obrero	7	-	SÍ	Guineo/1/20 racimos	No	No	No	No		
										Yuca/4/10 qq	-	-	-	-		
										Habichuelas/5/7.5 qq	-	-	-	-		
Pedro Almendáriz L.	27	1	2	0	100	-	6	5	SÍ	Maíz/2/1/2 saco a \$5/saco	No	No	-	-		
										Arroz/3/5 sacos a \$23/saco	SÍ	SÍ	No	-		
										Habichuelas/5/	No	No	-	-		
Simón Bolívar Santil	34	5	7	5to	100	-	20	35	No	Arroz/15/25 sacos a \$20/saco	SÍ	SÍ	SÍ	No		
										Frutos Menores/5	-	-	-	-		
										Habichuelas/10/5 sacos a	-	-	-	-		
										\$80-100/saco	-	-	-	-		
										Soya/34/\$22/qq	-	-	-	-		
Alcides Montero Peralta	35	9	10	6to	-	Obrero \$4/día	18	-	No	-	No	SÍ	No	No	No	No
Ernesto Romero	60	14	11	5to	80	Colmado	5	3 +2	SÍ	Arroz/5/4 qq/tarea	SÍ	SÍ	SÍ	No		
										Yuca/1/8 qq	-	-	-	-		
										Maní/5/5 qq/tarea	-	-	-	-		
										Habichuelas/5/3 qq/tarea	-	-	-	-		
Cristóbal Báez Villega	42	1	3	7mo	50	Chofer	25	12	No	Plátano/6/650 racimos/ tarea	No	No	No	No		
										Yuca/4/3 qq/tarea	-	-	-	-		
										Batata/2/2 qq/tarea	-	-	-	-		
										Arboles Frutales	-	-	-	-		
Solón Morillo de los Santos	40	8	9	5to	100 ?	Colmado	100	80	SÍ	Cebolla/20/5qq/tarea	SÍ	SÍ	SÍ	No		
										Maíz/40/2 qq/tarea	-	-	-	-		
										Habichuelas/60/2 qq/tarea	-	-	-	-		
										Remolacha/37/10 qq/tarea	-	-	-	-		

ZONA DE SAN JUAN DE LA MAGUANA

Nombre	Edad	Hijos	Depen- dientes	Nivel Acad.	% Agric.	Otro Ingreso	Tareas Tierra	En Cult.	Pro- pio	Cultivos			Fert.	Insect.	Asist. Téc.	Préstamo
										Tipo /	Area /	Producción				
Aníbal Ramírez	51	11	4	0	66	Colmado, Pesca	0	15	No	Hortalizas/3/?buena	Sí	-	-	-	-	
										Maíz/12/2.5 sacos/tarea	-	Sí	-	-		
										Habichuela/12/1.5 qq/tarea	-	-	No	No		
Luis Enrique Adamis	51	10	11	Doctor Derecho	11	Admin. Público \$8,400	450	40	-	Habichuelas/34/0.85 qq/ta.	No	No	No	Sí		
Venerado Mateo	47	5	5	3ro	100	-	34	34	SÍ	Arroz/3/4 qq/tarea	Sí	No	Sí	Sí		
										Guandules/1/5 qq /tarea	-	-	-	-		
										Yuca/1/5 qq/tarea	-	-	-	-		
										Habichuelas/30/loma	-	-	-	-		

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ZONA DE LOMA DE CABRERA

Nombre	Edad	Hijos	Depen- dientes	Nivel Acad.	% Agric.	Otro Ingreso	Tareas Tierra	En Cult.	Pro- pio	Cultivos			Fert.	Insect.	Asist.	
										Tipo /	Area /	Producción			Téc.	Préstamo
Pedro Alcántara	44	8	8	3ro	100	-	10	35	-	Maní/21/0.5 sacos/tarea	No	-	-	-	-	
										Maíz/21 en maní/1 saco/ta.	-	SÍ	-	-		
										Yuca/21 en maní	-	-	SÍ	-		
										Habichuelas	-	-	-	No		
										Guandules	-	-	-	-		
Manuel Pérez Pérez	54	12	10	2do	100	-	29	45	-	Habichuelas/3	SÍ	-	-	-		
										Maní/13	-	SÍ	-	-		
										Arroz/6/16 sacos a \$3/saco	-	-	No	-		
										Yuca/7/?\$100/qq	-	-	-	No		
Bienvenido Richardson	36	2	3	5to	100	-	225	225	-	Habichuelas/30	No	No	-	-		
										Maíz/10	-	-	SÍ	-		
										Guineo/3	-	-	-	SÍ		
										Café/12	-	-	-	-		
										Vacas/170	-	-	-	-		
										Yuca/5	-	-	-	-		
Rafael Contreras	39	9	10	5to	100	-	50	30	-	Arroz/7	SÍ	-	-	-		
										Yuca/15/4.7 qq	-	No	-	-		
										Maíz/3	-	-	SÍ	SÍ		
										Guandules/4	-	-	-	-		
										Batata/1/2	-	-	-	-		
										Ñame/1/2	-	-	-	-		
Radamés Paulino	28	3	8	4to Bach.	25	Empleado Privado	-	15?	-	Plátano/15	-	-	-	-		
										Yuca/15 mezclado	No	No	No	No		
Pascual Mercedes Oivo	52	7	8	5to	100	-	150	70	SÍ	Café/39	No	No	No	No		
										Plátano/9	-	-	-	-		
										Guineo/7	-	-	-	-		
										Yautía/2	-	-	-	-		
										Habichuelas/10	-	-	-	-		
Maíz/5	-	-	-	-												

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ZONA DE LOMA DE CABRERA

Nombre	Edad	Hijos	Depen- dientes	Nivel Acad.	% Agric.	Otro Ingreso	Tareas Tierra	En Cult.	Pro- pio	Cultivos			Asist.	
										Tipo / Area / Producción	Fert.	Insect.	Téc. Préstamo	
Epifanico Espinal	58	5	9	3ro	100	-	250	50	No	Arroz/4/?5 sacos/tarea Habichuelas/25 Maní/21/?1 qq/tarea	No - -	No - -	No - -	Sí - -
Silvano Ovando Contreras	45	4	7	3ro	10	Empleado Agricul- tura	100	20	No	Café/20/1 qq/tarea	Sí	Sí	Sí	No
Eusebio Peñalo	49	10	10	3ro	-	-	100	50	No	Arroz/40/10 sacos/tarea a \$13/saco = \$50/ta. netas Frutas Menores/10	Sí -	Sí -	No -	Sí -
Matías Guzmán	53	9	7	3ro	40	Rillero	50	14	No	Arroz/12/6 5 sacos/ta. = \$35/tareas netas	Sí	Sí	No	No
Federico Estévez	40	10	7	3ro	100	-	10	10	Sí	Yuca/2 Maíz/2 Plátano/2 Batata/2 Maní/2	Sí - - - -	No - - - -	No - - - -	Sí - - - -
Julio Pascual Quesada	41	7	7	6to	70	Trabaja terrero ajeno	0	0	No	?		?		
Pedrito Heded Batista	61	18	10	7mo	-	-	600	120	No	Arroz/60/?7 qq/saco Yuca/20/5 Maní/40/6	Sí - -	Sí - -	Sí - -	Sí - -
Farmelo Espinal	45	4	9	2do	25	Empleado ganadería	750	40	Sí	Arroz/15/8 qq/tarea Yuca/6/11 qq/tarea Batata/1 Caña/1.5 Guandules/12 Habichuelas/4.5	- - - - - -	- - - - - -	- - - - - -	- - - - - Sí

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ZONA DE LOMA DE CABRERA

Nombre	Edad	Hijos	Depen- dientes	Nivel Acad.	% Agric.	Otro Ingreso	Tareas Tierra	En Cult.	Pro- pio	Cultivos			Fert.	Insect.	Asist.	
										Tipo /	Area /	Producción			Téc.	Préstamo
Salvador	36	4	6	-	25	Empleado público	30	8	Sí	Yuca/8 Plátanos/8 mezclados	- Sí	- Sí	- Sí	- No	-	-
Bernaldo Espinal	50	5	7	-	100	-	300	20	Sí	Yuca/5 qq/tarea Plátanos Arroz/5 qq/tarea Batata/8 qq/tarea	Sí - - -	No - - -	No - - -	Sí - - -	-	-
Bivento Batista	32	5	9	4to	-	?	62	12	No	Yuca/12/24/tarea Maíz/7/22/tarea Arroz/28/tarea Guandules/3/1 qq	Sí - - -	No - - -	No - - -	No - - -	No	No
Ricardo González	42	6	10	2do	100	-	25	12	Sí	Maíz/4/5-6 qq Yuca/4/10 qq Maíz/4/5 qq	No - -	No - -	No - -	No - -	No	No

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